Managed Next-Generation 9-1-1

Bringing Digital Transformation to Public Safety Services

Next-generation 9-1-1 (NG9-1-1) enhances the speed, accuracy and efficacy of public safety responders by enabling citizens and public safety answering points (PSAPs) to transmit and receive voice, text, photos and video communications over an internet protocol-based (IP) network. With NG9-1-1, public safety agencies can take advantage of advanced functions to route calls more efficiently and reliably; send emergency alerts to wireless devices in a specific area; and receive communications from infrastructure sensors, medical alert systems and other Internet of Things (IoT) devices. With more complete information, they can make better decisions to save lives and ensure first responders return home safely.

But for public safety organizations to transition to NG9-1-1 and take advantage of the life-saving outcomes it brings, a number of challenges and drivers must be addressed.

NG9-1-1 Drivers and Challenges

Public safety leaders face the following challenges and drivers as they adopt NG9-1-1.

Pervasive use of mobile devices. According to National Emergency Number Association (NENA) estimates, 240 million calls are made to 9-1-1 in the United States each year; in many areas, at least 80 percent of calls are from wireless devices.[1] In addition, the National Center for Health Statistics found that, on average, nearly 55 percent of households have only mobile devices as their main mode of communication.

Public safety organizations have a tremendous opportunity to improve decision-making and emergency response by taking advantage of text, photo and video features, but integrating an array of device types can be challenging.

Data volume and complexity. PSAPs of the future must receive calls and many types of high-bandwidth data from a variety of devices. Converging disparate data from various sources — and making sense of it to improve situational awareness — requires technology, processes and skills that many organizations do not have in-house.

Aging systems. Many states and public safety organizations have aging equipment that hinders the transition to NG9-1-1. Networks may be unreliable or have insufficient bandwidth to support data-intensive calls and processes. And PSAP/call center capacity and capabilities may vary across sites.

Funding. Although the federal government recently awarded more than $109 million in grants to help fund NG9-1-1,[2] many organizations may not have the budget or sufficient funding for major capital expenditures (Capex) involved in the transition. Cloud-based services and other managed services models can alleviate the financial burden of Capex and offer more sustainable, predictable funding models.

These challenges and drivers make it difficult for states to obtain the infrastructure to support NG9-1-1. Given the rapid pace of change in technologies and the lack of in-house technical skills, many public safety organizations are turning to managed NG9-1-1 solution providers, whose expertise and technology are designed to help ensure the success of these critical initiatives.

Managed NG9-1-1: Staying Ahead of the Technology Curve

When the State of California needed to upgrade aging equipment to transition to NG9-1-1, it selected Lumen as one of its partners to develop and implement a statewide NG9-1-1 network.[3] The end-to-end, fully managed custom solution will include an emergency service IP network, IP-based software services and applications, and core call routing services to improve communication between the public and 9-1-1 centers. Once deployed, the solution will allow state and local agencies to add new functionality over time while reliably predicting costs. In addition, it can be connected to other systems to enable regional collaboration on larger disasters and emergencies.

Similarly, Pima County, Arizona needed to transition to NG9-1-1, but its capital-intensive model of owning and maintaining all the pieces of the solution was not feasible. Using a fully managed service from Lumen, Pima County 9-1-1 services are saving approximately $30,000 per month in operating costs and the county has saved millions in capital costs when compared to the costs of the old analog network. More importantly, the NG9-1-1 system will help save lives and property by providing public safety personnel with the information they need to respond quickly and appropriately to emergencies.

Solutions like those in California and Arizona serve as models for other jurisdictions that want to transform their 9-1-1 services. Managed NG9-1-1 services help agencies more easily and cost-effectively achieve a sustainable solution by

providing scalability, availability, flexibility, interoperability and other benefits without requiring capital investments. By taking advantage of solution provider expertise and management, organizations can focus on their core mission. In addition, cloud-based services enable organizations to extract greater value from their data by providing integration and the compute power needed to perform advanced analysis. Finally, managed service providers can often provide a level of cybersecurity and threat intelligence that is difficult to achieve in house.

Getting Started

The following suggestions will help organizations get started with a successful NG9-1-1 implementation.

Have a vision and a plan. There is no "one size fits all" solution for NG9-1-1, so defining the vision and the path forward often requires third-party expertise. Look for a vendor that has open-ended, collaborative processes for exploring the solution transformation methodology and creating a solution that will take you into the future.

Learn from others. Some states have already started down the NG9-1-1 path and are contributing their lessons learned and best practices to NG9-1-1 playbooks and other content. Industry forums like NENA and the Association of Public-Safety Communications Officials (APCO) are also great resources.

Collaborate with stakeholders. Ensure the decision-making and communications culture includes the experience, perspective and needs of not only citizens and those taking NG9-1-1 calls, but also first responders, command centers, vendors and other participants in the NG9-1-1 ecosystem.

Adopt a situation management mindset. In the past, the 9-1-1 process was a simple call management task of connecting someone who needed help with an agency providing help. A situation management mindset allows organizations to pull together data points from multiple sources to obtain much better situational awareness. It also provides a foundation to learn from data to improve call flow, accelerate responses and predict future needs.

When Lives are on the Line

A 9-1-1 call is the most important call a person can make. With so much at stake, next-generation 9-1-1 is no longer a nice-to-have. It's required to meet the demands of today and the future. The key to successful digital transformation is working with an

The Core Components of NG9-1-1

While no two implementations are the same, a managed NG9-1-1 solution typically includes the following core components:

Emergency Services IP Network (ESInet). A carrier-class MPLS backbone network acts as "the network of networks." Paired with next-generation core services, it connects PSAPs to each other and to the public and provides the bandwidth required to handle video, text and other digital information.

Call handling and other public safety applications. These IP-based applications intelligently receive, manage, validate and route calls, data and processes in the NG9-1-1 network.

Geographic information systems (GIS). The intelligence behind NG9-1-1 will come from geospatial (or GIS) data. With access to this data, NG9-1-1 solutions can more accurately pinpoint wireless callers, leverage policy-based routing and perform complex routing in critical emergencies.

Network security and global intelligence. To ensure regulatory compliance, improve network availability and protect citizen data, organizations should seek NG9-1-1 solution providers that have core competencies in network security and global threat intelligence.

NG9-1-1 solution provider that understands the intricacies of an organization's unique environment and can provide a carrier-grade network, intelligent applications, global threat intelligence and network security. With a managed service provider's expertise and management, organizations can focus less on keeping systems running and more on saving people's lives.

This piece was developed and written by the Center for Digital Government Content Studio, with information and input from Lumen.

Endnotes
1. https://www.nena.org/page/911Statistics
2. https://www.ntia.doc.gov/press-release/2019/departments-commerce-and-transportation-announce-109-million-grants-moderniz
3. https://www.companynewshq.com/company-news/telecoms-company-news/centurylink-chosen-by-state-of-california-to-deliver-faster-more-reliable-911-system

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